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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,280	06/27/2003	Eldad Zeira	1-2-0277.1US	8517

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EXAMINER

D AGOSTA, STEPHEN M

ART UNIT

PAPER NUMBER

2683

DATE MAILED: 02/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/608,280	ZEIRA ET AL.	
	Examiner	Art Unit	
	Stephen M. D'Agosta	2683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-13 is/are allowed.
- 6) ☒ Claim(s) 1-6 and 14-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

Figures 1-2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 and 14-15 rejected under 35 U.S.C. 103(a) as being unpatentable over Chillariga US 2002/0122406 and further in view of Cerwall et al US 6,868,277 and Papasakellariou US 2002/0131483.

As per **claims 1, 4, 14 and 15**, Chillariga teaches a method for evaluating downlink interference in a transmission having one or more communicates in a plurality of time-slots (paragraphs #12 and #28) and , the method comprising:

measuring interference in at least two of said time slots (paragraph #12 teaches measuring a timeslot and the preceding timeslot for interference);

but is silent on

computing the variance of said measured interference between said time slots if said measured interference in active slots is above a predetermined value;

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employing time division duplex escape mechanisms if the variance is not below (eg. above) a predetermined value; and

employing a handover escape mechanism if the variance is below a predetermined value.

Chillariga does teach using a "threshold-like" mechanism for decision-making process such that if a value is above/below a threshold, performing different procedures:

"..If this ratio never drops below an implementation-specific value, the burst is said to be isolated from the adjacent bursts. In the event that this safety margin is violated, another measure of isolation is the fraction of the total burst for which the margin is violated. This measure may be a weighted measure if the importance of data or the degree of coding protection afforded the data varies over the length of the burst. Data variation over the burst is typical in TDMA implementations.." (Para #12) Hence one skilled would use a similar threshold to determine which procedure to perform based on interference measurements.

Cerwall teaches:

An important group of channel allocation schemes are the schemes which base the channel allocation decision on measurements of the co-channel interference which would be experienced by a candidate channel if a connection were to be set up on the channel. It is possible that allocation of a channel with low co-channel interference will result in a negative impact on already existing calls in the network, and hence in deterioration of the quality of such calls. Such deterioration will often lead to disturbing hand-overs of the deteriorated calls to other radio channels, which may in turn lead to further existing connections being adversely affected.,

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(C1, L27-40). The applicant's specification states that "escape" can be channel allocation (see page 13, L1-2).

Papasakellariou teaches using variance calculations for interference:

(paragraph #26) "...For the m.sup.th spreading factor, sum the absolute values of the Rake soft output S.sub.m over a number of symbol periods (or over a number of slots). . . . After summation, the results may be divided by the square-root estimate of the noise and interference variance during the summation period..."

With further regard to claim 14, Chillariga teaches both TDMA and FDMA systems (Para #8).

With further regard to claim 15, Chillariga teaches mobile/BTS uplink/downlink transmitters and implied hardware/circuits which perform the invention's operation (see figures).

It would have been obvious to one skilled in the art at the time of the invention to modify Chillariga, such that it computes a variance and employs either TDD escape mechanisms or handover, to provide means for reducing the interference on the user's RF channel.

As per **claims 2-3 and 5-6**, Chillariga teaches claim 1/4 wherein the measure of variance is computed based on downlink time slots and/or downlink time slots and uplink time slots (Paragraph #28 teaches uplink and/or downlink interference).

Claim 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Chillariga, Cerwall and Papasakellariou and further in view of Wang US 5,666,651.

As per **claim 16**, Chillariga teaches a wireless communications network in which a plurality of wireless transmit and receive units (WTRUs) communicate with a plurality of base stations, and the WTRUs utilize an escape mechanism according to interference type (Paragraphs #12 and #28), the network comprising:

but is silent on

a circuit for scheduling transmission so that interference may be measured at all of a predetermined group of time slots;

a circuit for providing measured interference to a radio network controller and computing a measure of variance between the time slots if interference in active time slots is above a predetermined value; and

a circuit for employing time division duplex escape mechanisms in the case of the variance above a predetermined value, and employing a handover escape mechanism in the case of the variance below a predetermined value

Chillariga does teach using a "threshold-like" mechanism for decision-making process such that if a value is above/below a threshold, performing different procedures:

"..If this ratio never drops below an implementation-specific value, the burst is said to be isolated from the adjacent bursts. In the event that this safety margin is violated, another measure of isolation is the fraction of the total burst for which the margin is violated. This measure may be a weighted measure if the importance of data or the degree of coding protection afforded the data varies over the length of the burst. Data variation over the burst is typical in TDMA implementations.." (Para #12) Hence one skilled would use a similar threshold to determine which procedure to perform based on interference measurements.

Cerwall teaches:

An important group of channel allocation schemes are the schemes which base the channel allocation decision on measurements of the co-channel interference which would be experienced by a candidate channel if a connection were to be set up on the channel. However, decisions based upon such interference measurements only can lead to sub-optimal allocation. Such deterioration will often lead to disturbing hand-overs of the deteriorated calls to other radio channels, which may in turn lead to further existing connections being adversely affected. (C1, L27-40).

The applicant's specification states that "escape" can be channel allocation (see page 13, L1-2).

Papasakellariou teaches using variance calculations for interference:

(paragraph #26) "...For the m.sup.th spreading factor, sum the absolute values of the Rake soft output S.sub.m over a number of symbol periods (or over a number of slots). . . . After summation, the results may be divided by the square-root estimate of the noise and interference variance during the summation period..."

Wang teaches scheduling message traffic in a cellular network to minimize interference (title, Abstract, figures 5-6). Hence one skilled would monitor the scheduled messages (in their timeslots) to determine interference and then re-schedule new messages to minimize the observed interference.

It would have been obvious to one skilled in the art at the time of the invention to modify Chillariga, such that it schedules computations of interference variance and employs either TDD escape mechanisms or handover, to provide means for reducing the interference on the user's RF channel.

Allowable Subject Matter

Claims 7-13 allowed.

The prior art, either alone or in combination, does not teach these claims.

Claim 7: Chillariga does not teach a method for determining an appropriate escape mechanism based on a type of interference encountered during a transmission, the method comprising: receiving transmissions of a predetermined signal category; arranging said transmissions to a predetermined group of slots, so that interference may be measured at all of said slots; measuring interference at all of said slots; time averaging the measured interference to create time averaged values, and transmitting the time averaged values to a radio network controller; evaluating the time averaged interference measurements to determine whether interference with respect to a predetermined value; in the case of the interference measurements below the predetermined value, accepting the transmissions; in the case of the interference measurements above the predetermined value, computing a measure of variance between slots and determining the variance with respect to a predetermined value for the variance; in the case of the interference variance below the predetermined value for the variance, executing a handover as an escape mechanism; in the case of the interference variance above the predetermined value for the variance, executing a TDD escape mechanism for discontinuous interference.

Claims 8-13 depend from allowed claim 7.

Conclusion

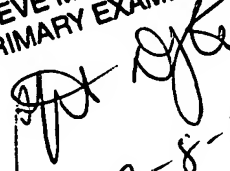
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. Wallstedt et al. US 6,301,478
2. Kumaran et al. US 2002/0168983
3. Pan et al. US 6,996,078
4. Andersson et al. US 5,594,949
5. Strawczynski et al. US 5,239,682
6. Desgagne et al. US 5,963,865
7. Dent US 5,579,306
8. Fouilland et al. US 2004/0028015

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. D'Agosta whose telephone number is 571-272-7862. The examiner can normally be reached on M-F, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Trost can be reached on 571-272-7872. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

STEVE M. D'AGOSTA
PRIMARY EXAMINER

2-8-2006